

Amendments to the Claims

1. (Currently Amended) A method of operating a processing system to classify a feature in time series data, the method comprising:

processing the time series data ~~with a membership function~~ to generate a hypersurface plurality of hypersurfaces:

processing the hypersurface hypersurfaces with a plurality of membership functions to identify a ~~cluster~~ plurality of clusters and to classify the clusters into a plurality of cluster types; and

processing the cluster clusters from one of the cluster types to construct ~~to classify~~ the feature; and

classifying the feature.

2. (Currently Amended) The method of claim 1 wherein processing the hypersurfaces hypersurface to identify the clusters ~~cluster~~ comprises contouring the hypersurfaces hypersurface to form the clusters ~~cluster~~.

3. (Cancelled)

4. (Currently Amended) The method of claim 1 ~~3~~ wherein the cluster types comprise type ~~comprises~~ an atmospheric cluster type.

5. (Currently Amended) The method of claim 1 ~~3~~ wherein the cluster types comprise type ~~comprises~~ a failure mode cluster type.

6. (Original) The method of claim 1 further comprising calculating feature membership values for the time series data based on the classified feature.

7. (Original) The method of claim 6 further comprising detecting outliers in the time series data based the feature membership values.

8. (Currently Amended) The method of claim 1 wherein the hypersurfaces have hypersurface has a height scale from zero to one.

9. (Currently Amended) The method of claim 6 4 wherein the feature membership values indicate hypersurface indicates confidence values for the time series data.

10. (Currently Amended) The method of claim 1 wherein processing the hypersurfaces with the membership functions to identify the clusters comprises: A ~~method of operating a processing system to classify a feature in time series data, the method comprising:~~   
~~processing the time series data with a plurality of membership functions to generate a plurality of hypersurfaces;~~

~~processing the hypersurfaces data to generate a composite hypersurface; and~~

~~processing the composite hypersurface to identify the clusters; and~~

~~processing the clusters to classify the feature.~~

11-20. (Cancelled)

21. (Currently Amended) A system to classify a feature in time series data, the system comprising:

an interface configured to receive the time series data; and

a processing system configured to process the time series data ~~with a membership function to generate a hypersurface plurality of hypersurfaces, process the hypersurface hypersurfaces with a plurality of membership functions to identify a cluster plurality of clusters and to classify the clusters into a plurality of cluster types, and process the cluster clusters from one of the cluster types to construct to classify the feature, and classify the feature.~~

22. (Currently Amended) The system of claim 21 wherein the processing system is configured to contour the hypersurfaces hypersurface to form the clusters eluster.

23. (Cancelled).

24. (Currently Amended) The system of claim 21 23 wherein the cluster types comprise type comprises an atmospheric cluster type.

25. (Currently Amended) The system of claim 21 23 wherein the cluster types comprise type comprises a failure mode cluster type.

26. (Original) The system of claim 21 wherein the processing system is configured to calculate feature membership values for the time series data based on the classified feature.

27. (Original) The system of claim 26 wherein the processing system is configured to detect outliers in the time series data based the feature membership values.

28. (Currently Amended) The system of claim 21 wherein the hypersurfaces have hypersurface has a height scale from zero to one.

29. (Currently Amended) The system of claim 26 24 wherein the feature membership values indicate hypersurface indicates confidence values for the time series data.

30. (Currently Amended) The system of claim 21 wherein: A system to classify a feature in time series data, the system comprising:  
~~an interface configured to receive the time series data; and~~  
~~a the processing system is configured to process the time series data with a plurality of membership functions to generate a plurality of hypersurfaces. process the hypersurfaces to generate a composite hypersurface. and process the composite hypersurface to identify the clusters. and process the clusters to classify the feature.~~

31-40. (Cancelled)

41. (Currently Amended) A software product to classify a feature in time series data, the software product comprising:

application software configured to direct a processing system to process the time series data ~~with a membership function~~ to generate a hypersurface plurality of hypersurfaces, process the hypersurface hypersurfaces with a plurality of membership functions to identify a cluster plurality of clusters and to classify the clusters into a plurality of cluster types, and process the cluster clusters from one of the cluster types to construct to classify the feature, and classify the feature; and

a storage system that stores the application software.

42. (Currently Amended) The software product of claim 41 wherein the application software is configured to direct the processing system to contour the hypersurfaces hypersurface to form the clusters cluster.

43. (Cancelled)

44. (Currently Amended) The software product of claim 41 43 wherein the cluster types comprise type comprises an atmospheric cluster type.

45. (Currently Amended) The software product of claim 41 43 wherein the cluster types comprise type comprises a failure mode cluster type.

46. (Original) The software product of claim 41 wherein the application software is configured to direct the processing system to calculate feature membership values for the time series data based on the classified feature.

47. (Original) The software product of claim 46 wherein the application software is configured to direct the processing system to detect outliers in the time series data based on the feature membership values.

48. (Currently Amended) The software product of claim 41 wherein the hypersurfaces  
have hypersurface has a height scale from zero to one.

49. (Currently Amended) The software product of claim 46 44 wherein the feature  
membership values indicate hypersurface indicates confidence values for the time series  
data.

50. (Currently Amended) A The software product of claim 41 wherein: to classify a  
feature in time series data, the software product comprising:

the application software is configured to direct the a processing system to process the  
time series data with a plurality of membership functions to generate a plurality of  
hypersurfaces, process the hypersurfaces data to generate a composite hypersurface, and  
process the composite hypersurface to identify the clusters, and process the clusters to  
classify the feature.

A storage system that stores the application software.

51-60. (Cancelled)